

16 January 1990

**FINDING OF NO SIGNIFICANT IMPACT
SEATTLE HARBOR NAVIGATION PROJECT
OPERATIONS AND MAINTENANCE, FEBRUARY-MARCH 1990**

1. STATEMENT OF WORK. The proposed work is to dredge shoaled sediment from station 235+00 to the Head of Navigation in the Duwamish Waterway for maintenance of the 15 foot authorized depth of the upper portion of the Seattle Harbor Navigation Project. Maintenance dredging and disposal is covered by revision to Public Notice CENPS-OP-NP-69 and disposal is scheduled to occur February through March 1990. The proposed work is to dispose of 45,000 - 80,000 cubic yards (cy) of maintenance dredged material which is acceptable for open-water disposal at the Elliott Bay unconfined, open-water disposal site. Washington Department of Ecology (Ecology) water quality certification was transmitted to the Corp of Engineers via letter, dated January 12, 1990. In addition, 15,000 cy of the material from the settling basin is proposed for use at the Municipality of Metropolitan Seattle (Metro) Denny Way capping project. This action is covered by a separate permit, reference Municipality of Metropolitan Seattle permit no. OYB-2-013099.

2. EVALUATION. The environmental assessment (EA) (attachment 1) and the Section 404(b)(1) Evaluation (attachment 2) have been prepared for the proposed work. Project material to be dredged has been evaluated for chemical contamination and biological toxicity according to Puget Sound Dredged Disposal Analysis (PSDDA) guidelines. The U.S. Environmental Protection Agency (EPA) and Ecology have determined that the proposed action is acceptable.

All operational and other conditions required for disposal of dredged material at the Elliott Bay unconfined, open-water disposal site and at the Denny Way capping site will be met. No adverse impacts to the environment have been identified that will occur as a result of the proposed work. Additionally, the cumulative effect of the proposed work on the environment is negligible.

3. FINDING OF NO SIGNIFICANT IMPACT. I have determined that performance of this work, in accordance with the conditions herein described or referenced, will not significantly affect the quality of the human environment. Further, I have determined that the proposed action is a Federal action not having a significant impact on the environment and thus have concluded that the preparation of a formal Environmental Impact Statement Supplement is not necessary.

Date

Milton Hunter
Colonel, Corps of Engineers
District Engineer

ENVIRONMENTAL ASSESSMENT
SEATTLE HARBOR NAVIGATION PROJECT
DUWAMISH CHANNEL AND TURNING BASIN OPERATIONS AND MAINTENANCE
DREDGING AND DISPOSAL

Reference the Section 404(b)(1) Evaluation (Clean Water Act) for this action and the Environmental Impact Statement Supplement (EISS), dated June 1979, for the Seattle Harbor Navigation Project Operations and Maintenance. This Environmental Assessment (EA) incorporates these documents by reference and provides additional project specific information and modifications to the EISS. The modifications do not result in significant changes to the EISS or in significant impacts to environmental resources. The following numbered sections refer to additions in the same numbered sections of the EISS.

1.6 Proposed Action.

As covered in the existing EISS referenced above, the proposed action is the continued maintenance dredging of the Seattle Harbor Navigation Project as authorized. All dredging is in the area of the Head of Navigation (upstream of station 235+00 as shown in figure 1). The amount of material to be dredged is 45,000 - 80,000 cubic yards (cy), and dredging will occur February-March 1990.

2.1.5.3.1.1 Duwamish Waterway.

Sediments were characterized consistent with Puget Sound Dredged Disposal Analysis (PSDDA) evaluation guidelines (reference Evaluation Procedures Technical Appendix, Phase I, June 1988, and Management Plan Report, Phase II, September 1989). Sixteen chemical analyses for the PSDDA conventional parameters and 58 contaminants of concern were conducted on samples from nineteen sampled stations. All sampling and compositing was conducted according to PSDDA and was coordinated with PSDDA agencies (U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Washington Departments of Ecology and Natural Resources).

No samples had metals concentrations greater than PSDDA screening levels. Stations corresponding with letters A-E (figure 2) also did not have concentrations of any organics greater than PSDDA screening levels. Stations corresponding with letters F-S were found to have some organic contaminants at concentrations greater than PSDDA screening levels. All concentrations found to be above screening levels were just above screening levels, and were far less than PSDDA maximum levels. These organics included 2-methylnaphthalene, flouranthene, pyrene, indeno(1,2,3-cd)pyrene, PCB's, and N-nitrosodiphenylamine. The highest value of PCB's was 350 ppb at one station. The data report is available from the Corps of Engineers, Seattle District, Environmental Resources Section ("Report for the Chemical Characterization of the Duwamish Channel and Settling Basin Sediments using PSDDA Guidelines", 1989, Varanasi et al.).

Sediments from station areas F-S were then evaluated using PSDDA bioassays including amphipod, saline microtox, and echinoderm embryo (sand dollar) bioassays. Sediments from stations J, O, Q, and R (equalling 16,000 cy) did not pass PSDDA interpretive guidelines and will not be dredged in this project. The reaches that will not be dredged include 240+90 to

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248+10, 249+55 to 251+25, and 255+85 to 257+35. All remaining station areas will be dredged (equalling 45,000 - 80,000 cy). The data report is available from the Corps of Engineers, Seattle District, Environmental Resources Section ("Duwamish Channel and Settling Basin Sediment Bioassays", (draft) December 1989, PTI Environmental Services).

Additional chemistry analyses are required based on a final condition survey that was performed in January 1990. According to PSDDA guidelines, if more than 2 feet of accumulation has occurred since the most recent characterization, additional characterization of the accumulated material is required. Sampling and analysis of these accumulated sediments is currently underway. Only recently accumulated material that passes PSDDA guidelines will be dredged. All sampling, analysis, and interpretation is being coordinated through the PSDDA agencies. Most winter storm accumulation occurred in the area of the turning basin, and is coarse sand, similar to the turning basin material that passed PSDDA SL's during the summer testing.

Disposal Alternatives.

In addition to disposal at the Elliott Bay open-water disposal site, material from this project will be used by Metro in a capping project at the Denny Way combined sewer overflow (CSO) outfall. Approximately 15,000 cy from the turning basin will be used to cap known contaminated sediments at Denny Way. This material is coarse sand and has contaminant levels below PSDDA screening levels. While the Corps is responsible for all aspects of the dredging, Metro is responsible for environmental review and Section 10/404 permit acquisition for capping at Denny Way (Reference permit no. OYB-2-013099 and supporting documents).

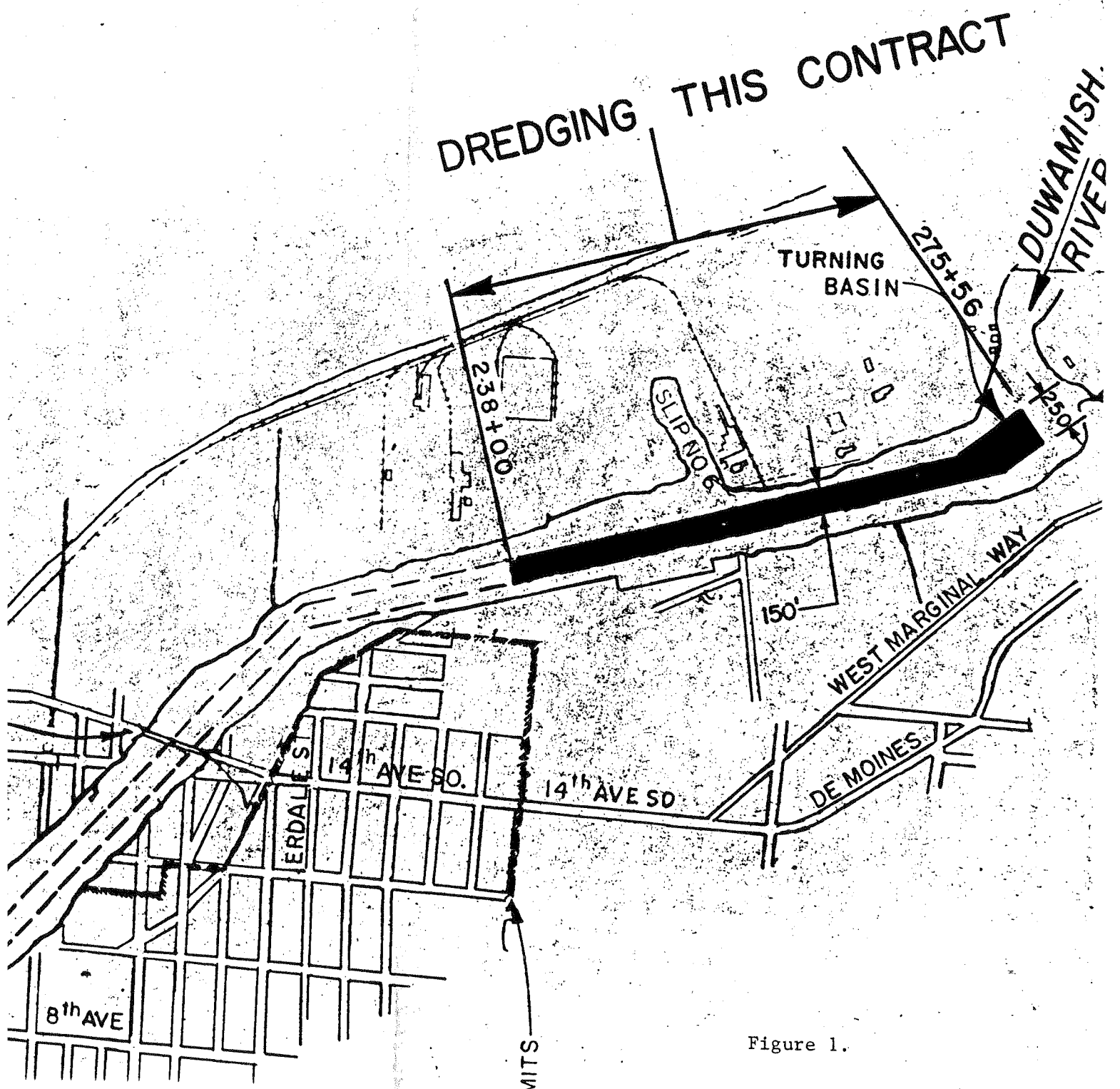


Figure 1.

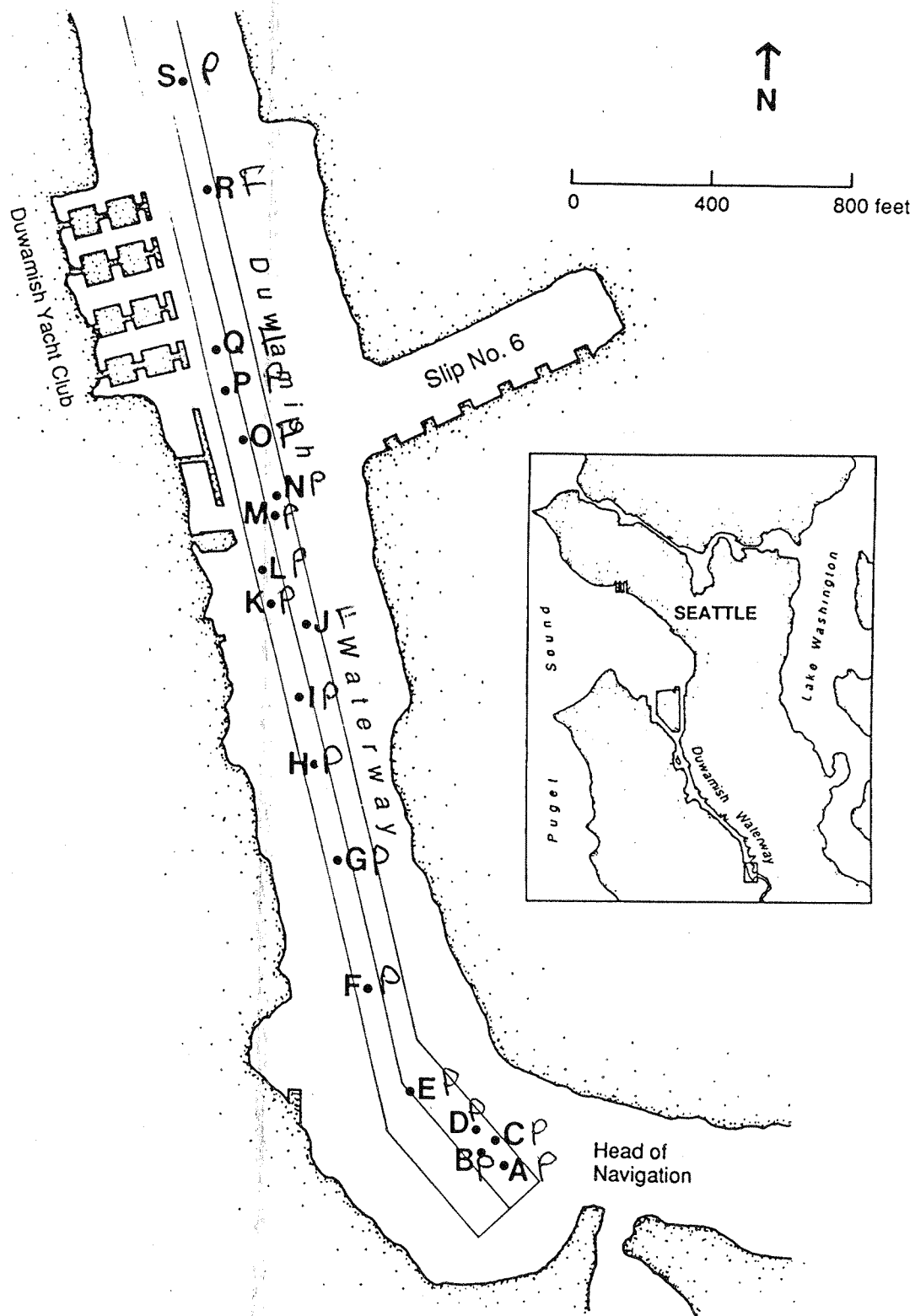
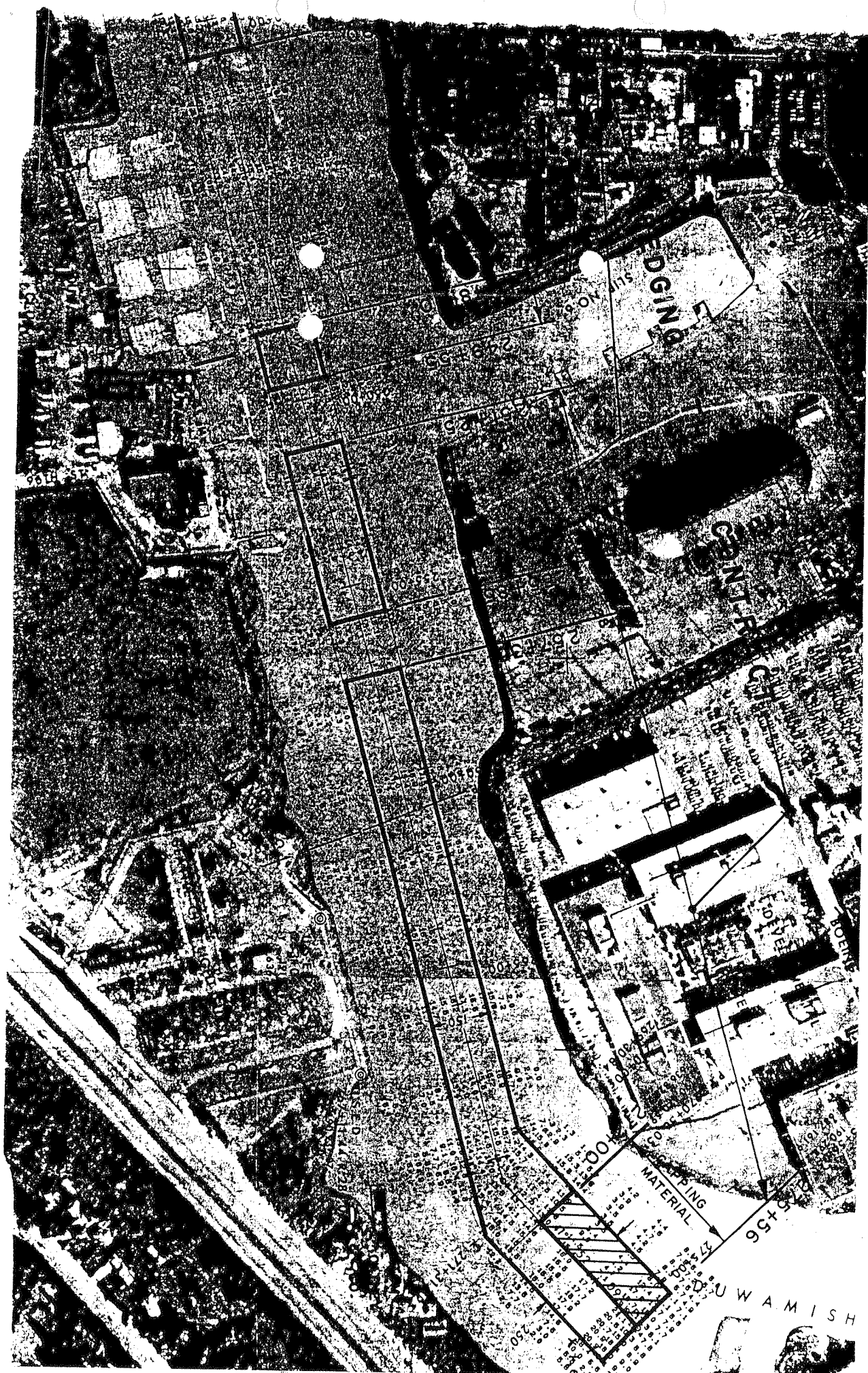


Figure 2. Sampling stations for the April 1989 Duwamish Channel Project.

(Varanasi et al., 1989)



6.3 Water Related Activities. No significant impact is expected on water-related recreation other than possible minor navigational conflicts in Elliott Bay and the West Duwamish Waterway due to transporting material to and from the disposal sites.

6.4 Noise and Esthetics. The Elliott Bay site is at least 2,500 feet from the Seattle shoreline and it is assumed that noise impacts from use of the site will be well within State and Federal noise standards, and generally unnoticeable. The disposal operations will be only a minor part of the marine activities ongoing in a busy harbor/marine transport area. The disposal of dredged material and dredging operations in the Duwamish River will have a short-term effect on the esthetic value of Elliott Bay. The presence of barges and equipment, and the short-termed turbidity plume and possibly odor would be the main impact on esthetics at the sites.

6.5 Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves. As part of the Elliott Bay disposal site identification mapping studies, a literature search was undertaken to establish if any historically significant shipwrecks were located within the Elliott Bay disposal site. In March 1988 additional literature review and side-scan sonar showed that shipwrecks do exist within the disposal site. Designation of the disposal site was closely coordinated with the State of Washington Office of Archaeology and Historic Preservation, and no unacceptable effects are expected.

7.0 Evaluation and Testing of Discharge Material.

7.1 General Evaluation of Dredged or Fill Material. Sediments were characterized consistent with Puget Sound Dredged Disposal Analysis (PSDDA) evaluation guidelines (reference Evaluation Procedures Technical Appendix, Phase I, June 1988, and Management Plan Report, Phase II, September 1989). Sixteen chemical analyses for the PSDDA conventional parameters and 58 contaminants of concern were conducted on samples from nineteen sampled stations. All sampling and compositing was conducted according to PSDDA guidelines and was coordinated with PSDDA agencies (Corps, EPA, WDOE, and WDNR).

No samples had metals concentrations greater than PSDDA screening levels. Stations corresponding with letters A-E (figure 3) also did not have concentrations of any organics greater than PSDDA screening levels. Stations corresponding with letters F-S were found to have some organic contaminants at concentrations greater than PSDDA screening levels. All concentrations found to be above screening levels were just above screening levels, and were far less than PSDDA maximum levels. These organics included 2-methylnaphthalene, flouranthene, pyrene, indeno(1,2,3-cd)pyrene, PCB's, and N-nitrosodiphenylamine. The highest value of PCB's was 350 ppb at one station. The data report is available from the Corps of Engineers, Seattle District ("Report for the Chemical Characterization of the Duwamish Channel and Settling Basin Sediments using PSDDA Guidelines", 1989, Varanasi et al.).

Sediments from station areas F-S were then evaluated using PSDDA bioassays including amphipod, saline microtox, and echinoderm embryo (sand dollar) bioassays. Sediments from stations J, O, Q, and R (equalling 16,000 cy) (240+90 to 248+10, 249+55 to 251+25, and 255+85 to 257+35) did not pass PSDDA interpretive guidelines and will not be dredged in this project. All remaining station areas will be dredged (equalling 45,000 - 80,000 cy). The data

report is available from the Corps of Engineers, Seattle District ("Duwamish Channel and Settling Basin Sediment Bioassays", (draft) December 1989, PTI Environmental Services).

Additional chemistry analyses are required based on a final condition survey that was performed in January 1990. According to PSDDA guidelines, if more than 2 feet of accumulation has occurred since the most recent characterization, additional characterization of the accumulated material will be required. Sampling and analysis of these accumulated sediments is currently underway. Only recently accumulated material that passes PSDDA guidelines will be dredged. All sampling, analysis, and interpretation is being coordinated through the PSDDA agencies. Most winter storm accumulation occurred in the area of the turning basin, and is coarse sand, similar to the turning basin material that passed PSDDA SL's during the summer 1989 testing.

8.0 Factual Determinations.

8.1 Physical Determinations. Grain size distribution changes can be expected due to disposal. These impacts were anticipated in designation of the site and are not expected to have a significant adverse impact on the aquatic ecosystem. A short-term increase in turbidity (suspended particulates) is expected at the disposal site. A minor component of the material may also become suspended in the nepheloid layer near the bottom of Elliott Bay. (see section 3.1).

8.2 Contaminants. All material slated for disposal passes PSDDA interpretive guidelines for disposal at the Elliott Bay unconfined open-water disposal site. Disposal of dredged material would not increase sediment chemical levels within the disposal site. (see section 7.1).

8.3 Determination of Cumulative Effects on the Aquatic Ecosystem. Long-term cumulative effects will be confined to the disposal site where existing sediment is periodically covered by dredged materials which have on balance lower chemical levels than the existing sediments in inner Elliott Bay. Benthic invertebrate and bottomfish populations in general will in the long-term experience a less chemically impacted habitat. Overall, the disposal will not contribute significantly to cumulative effects on Elliott Bay resources described earlier as a result of marine activities and influences over the long term.

9.0 Proposed and Alternative Actions to Minimize Adverse Effects.

9.1 Actions Affecting Plant and Animal Populations. The dredging and disposal will occur during the winter months of February and March which will avoid periods of phytoplankton blooms as well as avoid interference with juvenile salmonid migration.

10.0 Analysis of Practicable Alternatives.

10.1 Identification and Evaluation of Practicable Alternatives. (Reference PSDDA Phase I EIS, June 1988). Consideration has been given to the utilization of an upland area (via secondary handling) for disposal of project dredged material. This method would be extremely costly, and no available upland sites for long-term disposal of dredged material have been identified.

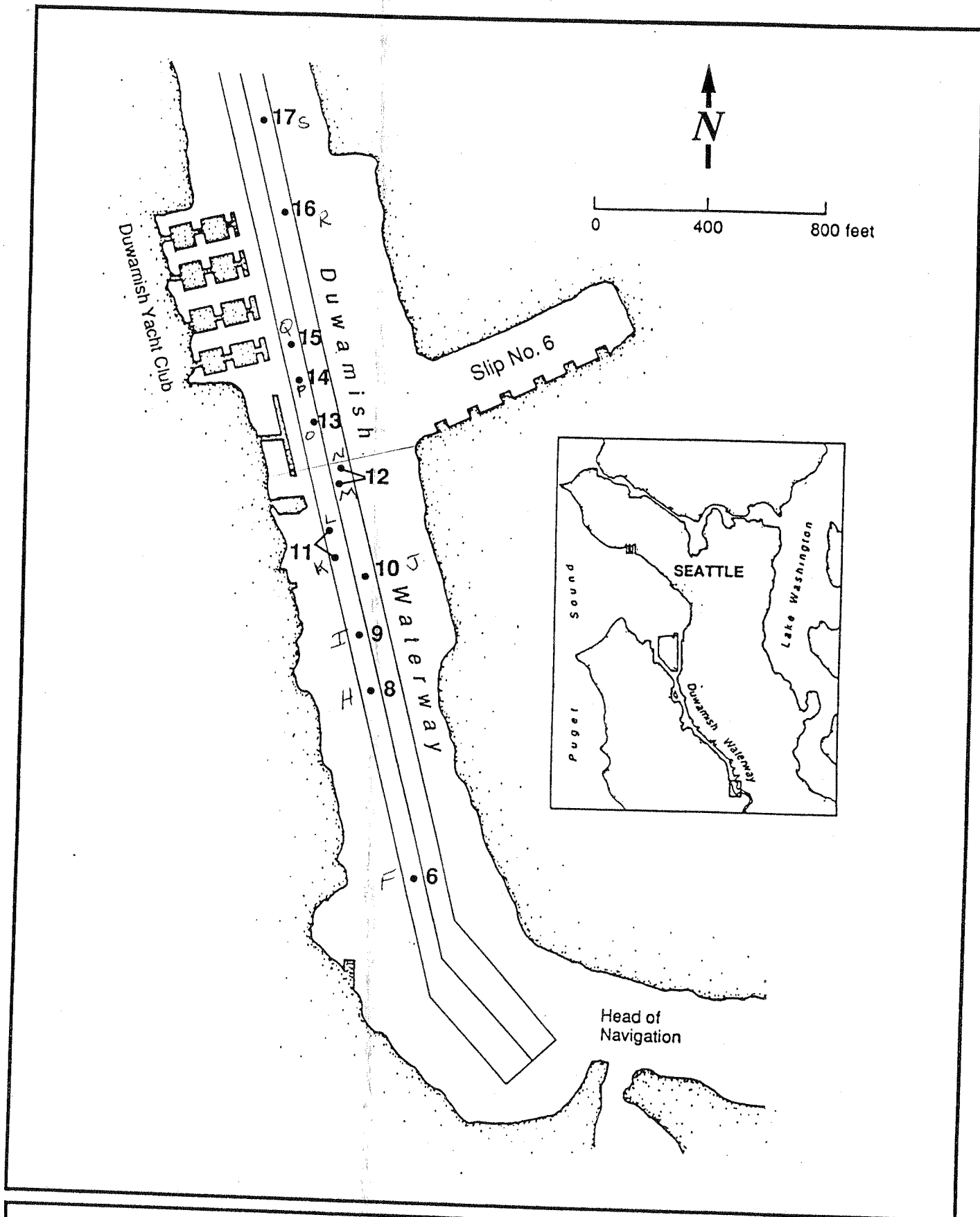


Figure 1. Sampling stations for the April 1989 Duwamish Channel Project (Varanasi et al. 1989)

Duwanish 03/1, 1990

Coding
Equivalencies

PAIS
Sampling
Location

PAIS
Lab
Sample ID's
0-4 4-12

PTI's
Lab Sample
ID's

NOTE

C1=1
C2=2
C3=3
C4=4
S1=5 } Sed conc
+ metals
only
METRO did
organics

A	1	>	C1, C2		
B	2				
C	3	>	C3, C4		
D	4				
E	5		S1		
F	6		S2✓	SD06	
G	7		S3	no chemistry	or bioassays done for S3
H	8		S4✓	SD08	
I	9		S5✓	SD09	
J	10	Failed	S6✓	SD10	
K	11	>	C5✓	SD11	bioassays
L	12				
M	13	>	C6✓	SD12	
N	14				
O	15	Failed	S7✓	SD13	
P	16		S8✓	SD14	
Q	17	Failed	S9✓	SD15	
R	18	Failed	S10✓	SD16	
S	19		S11✓	SD17	
	20		R1		
	21		R2		
	22		K1		
	23		W1		

R1	24	C7	SD20	
R2	25	C8	SD21	
R3	26	C8	SD22	
R4	27	C8	SD22	
R5	28	C8	SD21	
R6	29			
	30	R3	SD22	
	31	K2		

from John Greene,
PTI 8/27/90

bioassays

Note from Justine

Durhamish
April
~~Sept~~ 89

18 samples \Rightarrow 16 analyses + 1 Ref
- Chemistry

11
~~the~~ analyses - bioassays

Ammonia
+ Sulfide

microtox - held
overnight

bioassays - lead
Amphipod - temp
elutriation
sediment
perturbed
excellent

Oct 82

11 samples - only bioassay

Amphipod

Larvae +

Microtox

Jan 90

new material ~~was~~ sampled

2 chem
analyses

1 bioassay analyzed

NOAA - contaminants + metals - 12 samples

NOAA - organics on 17 samples

METRO - " " 5 samples

these last 3 samples retested for trichlorobenzene

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Duwamish O&M
16 October 1989

MEMO FOR: RECORD

TO: JOHN WAKEMAN
DAVID KENDALL
ALEX SUMERI

SUBJECT: DUWAMISH CHANNEL BIOLOGICAL RETESTING PLAN AND
INTERPRETATION OF INITIAL SAMPLING DATA

1. The purpose of this memo is for your immediate review so that I may proceed with the contracting paperwork necessary for retesting of Duwamish sediments. Resampling of the required Duwamish stations is scheduled for 23 and 24 October, 1989.
2. Sediment samples were collected by US Army Corps of Engineers (Corps) and National Marine Fisheries Service (NMFS) personnel on 18 and 19 April, 1989. Samples were collected from the Corps vessel PUGET, using a vibracore sampler. The detailed sampling plan is available in the NMFS report, however, in summary, stations A-E did not require biological testing, while stations F-S were determined to require biological testing based on chemistry. The biological tests were contracted through PTI to EVS and Laucks, and included amphipod, echinoderm larvae, and microtox.
3. AMPHIPOD RESULTS. The recommended QA/QC limits for temperature and salinity were exceeded during the amphipod test. Thus, it is impossible to ascertain the cause for the failure seen in the reference exposure chamber, though fine-grain size (88 percent fines) and high ammonia and sulfide levels may have also contributed (attachment 1).

RECOMMENDATION: Retest stations F-S for amphipod following all QA/QC limits. Use a reference sediment from Carr Inlet that most closely matches the grain sizes seen in the Duwamish channel (attachment 2). Test the overlying water for ammonia (\$18.50/sample) and sulfides (\$27.00/sample) at both the beginning and end of the test. Also perform conventional parameters on test sediment, reference sediment (Carr Inlet), and control sediment (West Beach).

4. ECHINODERM RESULTS. Using the combined endpoint data, mortality in the seawater control was set to 0%, with reference at 6.8%. All samples exhibited combined mortality/abnormality greater than 20% over control. All samples were also greater than 30% over reference, and all samples but one (sample 14) were statistically significant over reference (attachment 3).

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RECOMMENDATION: Retest all stations, even that represented by sample 14 (station P). This will provide us with a complete record for the project, and will prevent sample 14 being compared differently (different organism) from the other stations. PTI reports that sand dollars and oyster larvae are currently available (conversation Bob Pastorok). Use a 4 hour settling time rather than a 1 hour settling time. Test for ammonia and sulfides in the water column at the beginning and end of the exposure period.

5. MICROTOX RESULTS. Seven of the eleven microtox test sediments exhibited no decrease in luminescence. Four of the sediments (samples 6,8,9,11) exhibited decreases in luminescence in the dilution series analysis that were statistically different from the mean response to the reference sediment. Comparisons were made using only the initial series dilutions. The additional four replicates at the highest dilution (50%), were not used because the extract for the replicates was stored overnight.

RECOMMENDATION: Do not retest using microtox. Samples 6,8,9, and 11 failed the microtox test. These samples represent stations F, H, I, and K&L.

JUSTINE SMITH

cc.

URABECK
PASTOROK
WEINMANN/MARTIN

*Recommend: Re do Microtox
consider another lab for Echinoderm
Test*

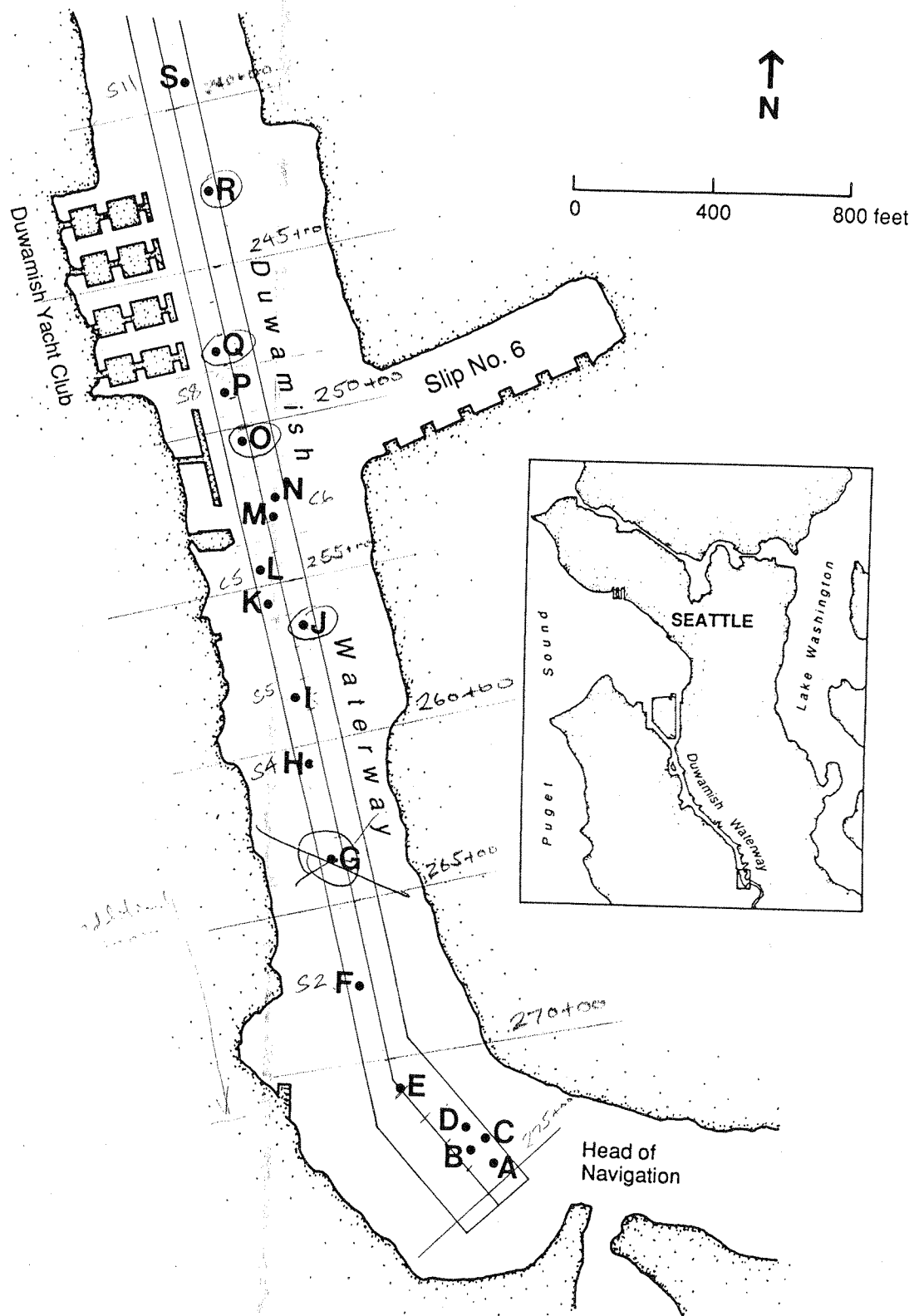


Figure 1. Sampling stations for the April 1989 Duwamish Channel Project.

Figure 3.

Sample compositing scheme for the April 1989 Duwamish Channel Project. Samples 1a and 1b were combined and mixed to form composite #1; 2a and 2b to form composite #2; etc.

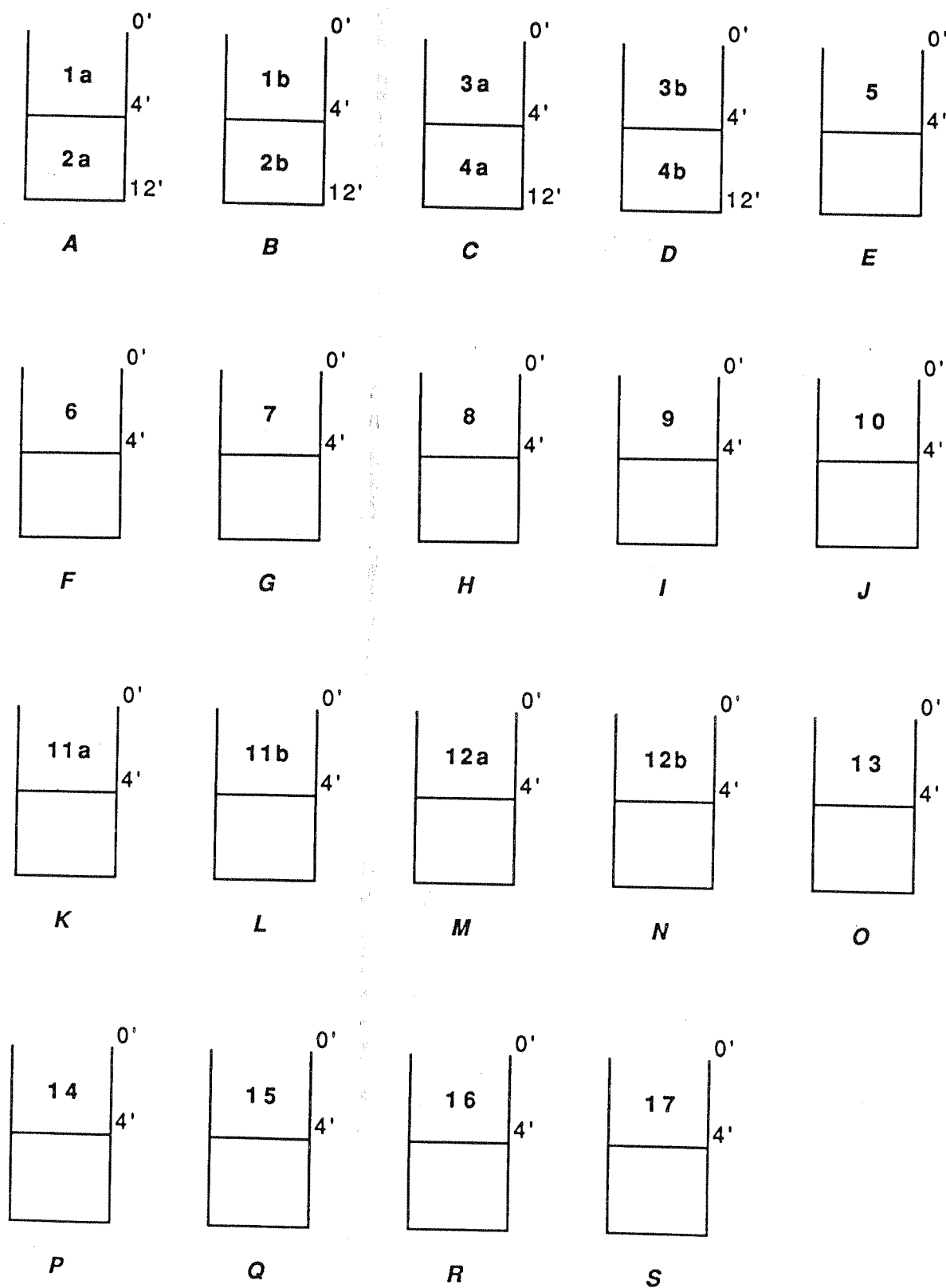


TABLE 2. ECHINODERM EMBRYO BIOASSAY RESULTS

Test Sediments	Percent Abnormality		Percent Mortality ^a		Combined Endpoint ^b	
	Mean Value	Standard Deviation	Mean Value	Standard Deviation	Mean Value	Standard Deviation
Control Seawater	5.7	2.1	0.0	11	0.0	9.8
Control Sediment	3.5	0.8	c	c	c	c
Reference	6.4	2.4	6.5	19	6.8	21
Station 6	20 ^d	3.5	51 ^d	32	58 ^d	29
Station 8	39 ^d	8.5	66 ^d	12	78 ^d	8.7
Station 9	33 ^d	6.7	74 ^d	11	81 ^d	7.8
Station 10	19 ^d	4.7	60 ^d	2.4	66 ^d	3.4
Station 11	53 ^d	16	52 ^d	45	72 ^d	31
Station 12	38 ^d	11	90 ^d	3.9	93 ^d	3.8
Station 13	52 ^d	16	85 ^d	14	92 ^d	7.0
Station 14	23 ^d	11	35	28	45	29
Station 15	20 ^d	7.2	69 ^d	17	74 ^d	14
Station 16	26 ^d	11	41 ^d	11	53 ^d	13
Station 17	27 ^d	7.9	49 ^d	21	60 ^d	17

^a Calculated relative to seawater control at the end of the 48-hour exposure period.

^b Calculated as the total number exhibiting abnormality or mortality relative to the sea water control at the end of the 48 hour exposure period.

^c Mortality and abnormality in control sediment test were less than in control seawater test.

^d Statistically significant ($P \leq 0.05$) difference in pairwise comparison with reference sediment response.

TABLE 3. MICROTOX BIOASSAY RESULTS

Sediments	EC ₅₀	Percent Luminescence Decrease at 50% Extract Concentration			
		Initial Dilution Series		Additional Replicates	
		Mean Value N=2	Standard Deviation	Mean Value N=4	Standard Deviation
Control ^a	>100% ^b	44	0.49	44	1.6
Reference	NC	-9.9	0.64	-19	8.9
Station 6	NC	85 ^c	6.9	55 ^c	1.3
Station 8 ^a	5.8%	81 ^c	5.8	20 ^c	1.2
Station 9	16%	51 ^c	3.9	9.9 ^c	3.8
Station 10	NC	NLD	NLD	NLD	NLD
Station 11 ^a	24%	56 ^e	0.0	3.7 ^{c,d}	2.2
Station 12	NC	NLD	NLD	NLD	NLD
Station 13	NC	NLD	NLD	NLD	NLD
Station 14	NC	NLD	NLD	NLD	NLD
Station 15	NC	NLD	NLD	NLD	NLD
Station 16	NC	NLD	NLD	NLD	NLD
Station 17	NC	NLD	NLD	NLD	NLD

^a Significant dose-response relationship reported.

^b Value reported as nontoxic due to EC₅₀ value >100 percent.

^c Statistically different (P\0.05) from mean response to reference sediment.

^d NLD value in one replicate converted to 0.0 for purposes of statistical analysis.

NC - Not calculated.

NLD - No luminescence decrease.

^e Lack of variance and replication prevented statistical comparison.

** PSDDA DATA COLLECTION SHEET D

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: *****
:
: * Bioassay *
: *****

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**** Amphipod Mortality ****

Species Name: *Rhepoxynius abronius*
NODC Code: 6169421504
Exposure time: 10 days

[illegible]

1334

